

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

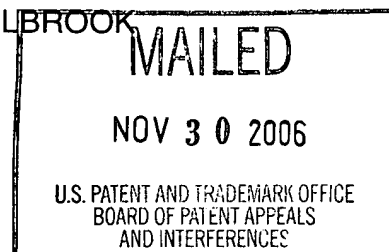
## UNITED STATES PATENT AND TRADEMARK OFFICE

### BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte MINGCHIH M. TSENG, and CARL M. PHILBROOK

Appeal No. 2006-3223  
Application No. 10/663,352

ON BRIEF



Before ADAMS, GREEN, LEBOVITZ and, Administrative Patent Judges.

LEBOVITZ, Administrative Patent Judge.

#### DECISION ON APPEAL

This appeal involves claims to a color changing matrix comprising a layer that contains water-insoluble polymer, water-soluble polymer, and water-leachable colorant. The Examiner has rejected the claims as anticipated. We have jurisdiction under 35 U.S.C. § 134. We reverse.

#### Background

Tooth decay and periodontal disease are caused by bacteria in the mouth. Specification, page 1, lines 7-8. Brushing the teeth is a common way of reducing mouth bacteria. Id., page 1, lines 11-12. "After a toothbrush has been used, there are a large number of bacteria clinging to the bristles, even after the brush has been rinsed."

Id., page 1, lines 17-19. “[T]hese bacteria typically will multiply on the bristles between uses.” Id., page 1, lines 20-21. To address this problem, the instant application provides a toothbrush which contains a sustained-release matrix loaded with an anti-microbial agent that kills bacteria. Id., page 2, lines 13-15; page 4, line 4-5. Colorants can also be included which leach from the sustained release matrix over time, providing an indication of brush wear and depletion of the anti-microbial agent. Id., page 2, lines 17-20; page 6, lines 14-30.

#### Claim construction

Claims 45-52 are appealed. These are all the pending claims in this application. Because separate reasons for patentability were not provided for any of the individual claims, all the claims stand or fall together. 37 CFR § 41.37(c)(1)(vi). We select claim 45 as representative of the appealed claims for the purpose of deciding this appeal.

45. A color-changing matrix comprising a layer including a mixture of a water-insoluble polymer, a water-soluble polymer, and a water-leachable colorant that leaches from the matrix when the matrix is exposed to water to provide a change in color.

The first step of an anticipation analysis is claim construction because that is necessary to understand the scope and meaning of the claims. See Gechter v. Davidson, 116 F.3d 1454, 1457, 43 USPQ2d 1030, 1032 (Fed. Cir. 1997).

The Examiner construes the term “mixture” recited in claim 45 to cover embodiments where the polymer and colorant components are arranged in different sublayers of the claimed layer. Answer, page 5. Appellants argue that the Examiner’s

construction is improper, and that the claimed mixture is drawn to a single layer containing all three components. Brief, page 8.

The claim requires that the matrix comprises “a layer including a mixture of” three components: water-insoluble polymer, water-soluble polymer, and a water-leachable colorant. The Examiner argues that the “mixture” in the “layer” could be further structured as a “plurality of sublayers.” Answer, page 5. To support this construction, he cites a dictionary definition of “mixture.” Id., page 6. He also refers to the application’s description of a preferred two-layered matrix, which he argues indicates that “the matrix may have individual sublayers . . . but the matrix is still one overall layer.” Id., page 7. As evidence that he correctly construed the claim, the Examiner introduces Iijima,<sup>1</sup> which he characterizes as describing “an individual layer” which comprises a plurality of sublayers. Id., page 5.

The claims are directed to a “color changing matrix.” In preferred embodiments, the matrix is a “flat template” attached to a toothbrush at the base of the bristles. Specification, page 4, lines 11-13. Three preferred templates (matrices) are described in the application: 1) “Single-layer template including chlorhexidine” (page 7, line 29); 2) “Two-layer template including chlorhexidine” (page 17, line 1); and 3) “Template including a colorant” (page 18, line 10). The template containing the colorant is described to preferably contain two layers, each with a different colorant. Id., page 18, lines 11-12. From this written description, it is clear that the matrix can contain more than one layer. However, to resolve the dispute between Appellants and the Examiner,

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<sup>1</sup> Iijima et al. (Iijima), U.S. Pat. No. 4,701,404, issued Oct. 20, 1987

we must determine whether the “mixture” recited in claim 45 can also be comprised of more than one layer.

As described in the specification, each single layer in a matrix is formed by mixing its components together. To prepare a preferred single-layer matrix, Appellants describe mixing a water-insoluble polymer (“ELVAX 360”), a water-soluble polymer (“Polyox”), and an anti-microbial agent (“chlorhexidine”) in a blender (“The ELVAX 360, Polyox, and chlorhexidine digluconate are mixed in a blender”). Specification, page 11, line 33-page 12, line 2. The “mixture” of the three components is then extruded as a flat matrix. Id., pages 12-13. The section in which this process description is found is titled “Blending of Materials.” In sum, the application’s written description in this section indicates that the “mixture” is a commingling of the polymers and anti-microbial agent into one mass, consistent with the dictionary definition of “mix”<sup>2</sup> which is evidence of its ordinary usage.

When two-layer embodiments are described, it is the matrix itself which is characterized as being composed of layers, not a component of it. See e.g., specification, page 4, lines 27-30; page 6, lines 1-2; page 17. The Examiner’s construction of the claim puts the layers into the mixture, rather than into the matrix. The specification, as indicated above, expressly refers to “mixture” in its description of the process for blending the components to produce a single layer. When more than one layer is included, the specification refers to this layer as being present in the matrix. Thus, the specification does not use the term “mixture” when it intends to refer to the

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<sup>2</sup> Mix: “1 a (1): to combine or blend into one mass (2) to combine with one another b: to bring into close association ... 2: to form by mixing components . . . syn mix. MINGLE, COMMINGLE, BLEND, MERGE ...” Webster’s New Collegiate Dictionary 737 (1976).

presence of more than one layer. See e.g., description of three preferred embodiments beginning at id., page 7, line 29; page 17, line 1; and page 18, line 10.

The claim expressly states that the layer is a mixture of three different components. In examining the claims of an application, the PTO is permitted to adopt “the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant's specification.” In re Morris, 127 F.3d 1048, 1054, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997). See also In re Crish, 393 F.3d 1253, 1256, 73 USPQ2d 1364, 1367 (Fed. Cir. 2004). As explained above, when read in light of the specification, the person of ordinary skill in the art would understand that the components in the recited “layer” were blended together, rather than being a mixture of layers. This does not rule out the presence of an additional layer in the claim. Because claim 45 uses “comprising” terminology, it is open to the presence of more than one layer in the claimed color-changing matrix. However, as we have construed this claim, the additional layers are not defined by the recited “mixture” of three components.

The Examiner points to the description on page 4 of a matrix that includes two layers, and concludes that “the matrix is still one overall layer.” Answer, page 7. We agree with Appellants that the cited passage does not refer to the matrix as being “one overall layer.” Reply Brief, page 1. Rather, it expressly states that “the matrix includes two layers, joined together.” Specification, page 4, lines 27-28.

The Examiner relies on the dictionary definition of “mixture” to support his claim construction. Answer, page 6. This dictionary defines “mixture” as referring to, inter

alia, “an instance of mixing” or “a product of mixing.” The definition also states that it can be a “portion of matter consisting of two or more components . . . that retain their own properties.” It describes “a fabric woven of variously colored threads” as an example. The Examiner concludes that this means a mixture can include separate components in separate locations, a description that would cover a layered structure. Answer, page 6. We do not agree. Even a homogenous aqueous salt solution of NaCl (which is mixture of NaCl and water) can be described as having “separate components in separate physical locations” because the water molecules and the salt ions each would occupy different spatial positions in the aqueous solution. Consequently, we do not find this argument to be persuasive.

Iijima was introduced by the Examiner to support the position that a layer can be comprised of sublayers. Answer, pages 5 and 7. We have considered this evidence, but do not find it persuasive. As indicated by the Examiner, Iijima refers to “sublayers” within a single layer. Id. However, Iijima also refers to a “mixture” of silver halide emulsions which are incorporated into a single sub-layer. “[A] mixture of two or more monodispersed silver halide grains may be incorporated in at least one of the blue-, green- and red-sensitive silver halide emulsion layers.” Iijima, column 8, lines 21-25. Iijima uses the term “mixture” to mean a blend or commingling of components, the same meaning we have interpreted it to have in instant claim 45. Like the instant specification, when Iijima means to refer to a “layer,” he expressly uses that the term. Thus, we do not find Iijima to support the Examiner’s construction.

In sum, we conclude that the broadest reasonable construction of claim 45 in view of the specification and the knowledge of the person of ordinary skill in that art is

that the matrix contains at least one layer, where the layer comprises three recited components blended together to form a single layer.

### Anticipation

Claims 45-52 stand rejected under 35 U.S.C. § 102(b) as anticipated by Barclay.<sup>3</sup>

The Examiner rejects the claims as anticipated by Barclay, which describes an osmotic delivery device with an outer layer made from a water-insoluble polymer and an inner layer comprising a water-soluble polymer. Answer, page 4. The device contains a water-soluble drug which is yellow in color and which leaches from the delivery device. Id. There is no dispute between the Examiner and Appellants about what Barclay teaches. The Examiner applies Barclay to the claims because, under his claim construction, claim 45 covers a device in which the water-insoluble polymer, water-soluble polymer, and colorant are arranged in different layers, rather than being limited to a single layer containing a blend of all three components. The former structure is described by Barclay, but the latter structure is not. Having concluded that the Examiner's claim construction is not proper, we are led to the conclusion that Barclay's device does not anticipate the claims. We reach this conclusion because, as Appellant argues, Barclay does not teach a device containing the recited water-insoluble polymer, water-soluble polymer, and water-leachable colorant in a single layer. Brief, page 11.

For the forgoing reasons, we find that the Examiner has failed to establish a case of prima facie obviousness. This rejection is reversed.

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<sup>3</sup> Barclay et al. (Barclay), U.S. Pat. No. 5,021,053, issued Jun. 4, 1991

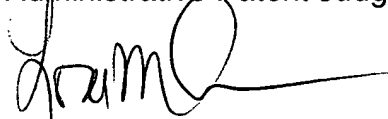
Other issues

In making the decision to reverse the rejection, we have reached a different claim construction than the one set forth by the Examiner. Upon return of this application to the technology center, we suggest that the Examiner reconsider the prior art in light of the revised claim construction.

REVERSED



Donald E. Adams  
Administrative Patent Judge



Lora M. Green  
Administrative Patent Judge



Richard M. Lebovitz  
Administrative Patent Judge

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) INTERFERENCES  
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Application No. 10/663,352

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Fish & Richardson PC  
P.O. Box 1022  
Minneapolis, MN 55440-1022

<b>Notice of References Cited</b>	Application/Control No. 10/663352	Applicant(s)/Patent Under Reexamination Appeal No. 2006-3223	
	Examiner BPAI	Art Unit 1600	Page    of

**U.S. PATENT DOCUMENTS**

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
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	B	US-			
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**FOREIGN PATENT DOCUMENTS**

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**NON-PATENT DOCUMENTS**

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	Webster's New Collegiate Dictionary 737 (1976).
	V	
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\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
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EIS

# New Collegiate Dictionary

*A Merriam-Webster®*

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Made in the United States of America

~ to Mars> 5: CALLING.

g \mish-(ə)nɪŋ\ 1: to send  
carry on a religious mission

yle used in the early Spanish  
~ architecture>  
: relating to, engaged in, or  
tic of a missionary  
ndertaking a mission and esp.

ONARY  
-izing vi: to carry on mis-  
ry work among ~ mis-sion-  
mis-sion-iz-er \mish-ə-ni-

adj [Mississippi river] 1: of  
; or the Mississippi river 2  
l of the Paleozoic era in No.  
preceding the Pennsylvanian  
~ Mississippian n  
ive, lit., letter intended to be  
ETTER  
dice that loses the main bet  
ncorrectly  
spelling  
t \-spend-ing: to  
ent life>  
e incorrectly: give a false  
nt\ 2  
> 2: a mistake in judgment

South \miz-ə\ n [alter. of mis-  
n themselves, but argue over  
dgate] 2 dial: MISTRESS la  
SS

MD mist mist, Gk omichle  
ating or falling in the atmo-  
th and approaching the form  
scures 3: a film before the  
or objects suggestive of a mist  
uid in a gas c: a fine spray  
otch) served over cracked ice  
peel syn see HAZE  
t: to become dim or blurred  
ist  
capable of being misunder-

\-stük\; mis-tak-en \-stā-  
ON \mistaka\ to take by mis-  
e at TAKE\ vi 1: to blunder  
ie dark> 2: to misunder-  
ISINTERPRET <don't ~ me, I  
ke a wrong judgment of the  
tily wrongly: confuse with  
r> ~ vi: to be wrong <you  
it you—Thomas Hardy> —

hared meaning element: to  
STAKES one thing for another  
ought) one fails to recognize  
therefore identifies it with  
h for vigor and substitute  
vis> <he often was mistaken  
thing usually with another  
things that have similarities  
moral problems with purely  
> One CONFOUNDS things, or  
xes them up so hopelessly as  
differences; the term usually  
bewilderment or a muddled  
accumulated knowledge and  
almost irresistible —W. R.

of the meaning or implication  
statement proceeding from  
dge, or inattention syn see

of \master\ 1 — used some-  
Mr. 2: SIR — used without  
t address of a man who is a  
y a paper> 3: a man not  
norfic or professional title  
eater scholar in his field than  
your Mister likes herbs, but

ht \-thót\; -think-ing vi,  
avorably ~ vi, archaic: to

y <mistimed his swing and

'stle mistletoe, fr. ME mistel,

iz-\ n [ME mistilto basil, fr.  
il + tian twig; akin to OHG  
z zein twig]: a European  
lbum of the family Loran-  
hick leaves, small yellowish  
ies; broadly: any of various  
American genus Phoraden-

'rov, fr. mistral masterful, fr.  
a strong cold dry northerly

mis-trans-late \mis-tran(t)s-lāt,  
-tranz-\ vt: to translate incorrectly  
mis-trans-la-tion \lā-shən\ n: the act  
or an instance of mistranslating  
mis-treat \('mis-trēt\ vt [ME mistret-  
en, prob. fr. MF *mestralier*, fr. OF, fr.  
mis- + *traitier* to treat — more at  
TREAT]: to treat badly: ABUSE —  
mis-treatment \-mənt\ n  
mis-tress \mis-tras\ n [ME *maistresse*,  
fr. MF, fr. OF, fem. of *maistre* master  
more at MASTER] 1: a woman who has  
power, authority, or ownership: as a  
: the female head of a household b  
: a woman who employs or supervises  
servants c: a woman who possesses or  
controls something d: a woman who  
is in charge of a school or other establishment e: a woman of the  
Scottish nobility having a status comparable to that of a master 2  
a chiefly Brit: a female teacher or tutor b: a woman who has  
achieved mastery in some field 3: a country or state have su-  
premacy over others 4: something personified as female that  
rules or directs 5 a: a woman with whom a man habitually forni-  
cates b archaic: SWEETHEART 6 a — used archaically as a title  
prefixed to the name of a married or unmarried woman and now  
superseded by Mrs and Miss b \miz-az, -as\ chiefly South  
& Midland: MRS la

mistress of ceremonies: a woman who presides at a public  
ceremony or who acts as hostess of a stage, radio, or television show  
mis-trial \('mis-trī-əl\ n: a trial that has no legal effect by  
reason of some error or serious prejudicial misconduct in the  
proceedings

'mis-trust \('mis-trast\ n: a lack of confidence: DISTRUST syn  
see UNCERTAINTY ant trust, assurance — mis-trust-ful \-fəl\ adj  
— mis-trust-ful-ly \-fəl-ē\ adv — mis-trust-ful-ness n

2 mistrust vt 1: to have no trust or confidence in: SUSPECT <<ed  
his neighbors> 2: to doubt the truth, validity, or effectiveness  
of <<ed his own judgment> 3: SURMISE <your mind ~ed there  
was something wrong—Robert Frost> ~ vi: to be suspicious  
misty \mis-tē\ adj mist-i-er, -est 1 a: obscured by mist b  
: consisting of or marked by mist 2 a: INDISTINCT <a ~ recol-  
lection of the event> b: VAGUE, CONFUSED <avoided the large,  
vague, ~ issues—Reuben Abel> — mist-i-ly \-tē-lē\ adv —  
mist-i-ness \-tē-nəs\ n

misty-eyed \mis-tē-īd\ adj 1: having eyes covered with mist  
2: DREAMY, SENTIMENTAL << recollections>

mis-un-der-stand \('mis-ən-dər-'stand\ vt 1: to fail to under-  
stand 2: to interpret incorrectly

mis-un-der-stand-ing \-stān-ding\ n 1: a failure to understand  
2: MISINTERPRETATION 3: QUARREL, DISAGREEMENT

mis-us-age \mis-ū-sij, ('mis(h)-yū-, -zj\ n [MF *mesusage*, fr.  
mis- + *usage* 1: bad treatment: ABUSE 2: wrong or improper  
use (as of words)

'mis-use \mis-ūz, ('mis(h)-yūs\ vt [ME *misusen*, partly fr. mis-  
+ *usen* to use; partly fr. MF *mesuser* to abuse, fr. OF, fr. mis- +  
user to use] 1: to use incorrectly: MISAPPLY <misused his tal-  
ents> 2: ABUSE, MISTREAT <misused his servants>

2 mis-use \mis-ūis, ('mis(h)-yūs\ n: incorrect or improper use  
: MISAPPLICATION

mis-val-ue \('mis-val-('yū-, -yō-w)\ n: UNDERVALUE

mis-ven-ture \('mis-ven-čər\ n: MISADVENTURE

mis-writing \('mis-rīt\ vt -wrote \-rōt\; -writ-ten \-rit-n\;  
-rit-ing \-rit-ing\ vt: to write incorrectly

mite \mīt\ n [ME, fr. OE *mite*, akin to MD *mite* mite, small  
copper coin, OHG *meizan* to cut, OE *gemad* silly — more at MAD]

1: any of numerous small to very minute arachnids (order Acari-  
na) that often infest animals, plants, and stored foods and include  
important disease vectors 2 [ME, fr. MF or MD; MF, small Flem-  
ish copper coin, fr. MD]: a small coin or sum of money 3 a  
: a very little: BIT <could be that I am a ~ prejudiced—John  
Fischer> b: a very small object or creature

'mit-er or mit-ter \mit-ər\ n [ME  
*mitre*, fr. MF, fr. L *mitra* headband,  
turban, fr. Gk; akin to Skt *mitra*  
friend] 1: a liturgical headress  
worn by bishops and abbots — see  
VESTMENT illustration 2 a: a surface  
forming the beveled end or edge of a  
piece where a joint is made by cutting  
two pieces at an angle and fitting them  
together b: MITER SQUARE

2 mit-er or mit-ter \mit-ər\ or mit-  
tered; mit-ter-ing or mit-tring \mit-ər-ing\ 1: to confer a mit-  
er on 2: to match or fit together in a mit-er joint b: to bevel the ends  
of for making a mit-er joint — mit-ter-er \mit-ər-ər\ n

mit-er box n: a device for guiding a handsaw at the proper angle  
in making a mit-er joint in wood

mit-er gear n: one of a pair of interchangeable bevel gears with  
axes at right angles

mit-er square n: a bevel with an immovable arm at an angle of 45  
degrees for striking mit-er lines; also: a square with an arm  
adjustable to any angle

mit-er-wort or mit-ter-wort \mit-ər-wōrt, -wō(ə)rt\ n: any of a  
genus (*Mitella*) of rhizomatous perennial herbs of the saxifrage  
family that bear a capsule resembling a bishop's mit-er

Mith-ra-ic \mith-rā-ik\ adj [L Gk *mithraikos* of Mithras, ancient  
Per god of light, fr. Gk *Mithras*, fr. OPer *Mithra*]: of or relating  
to an oriental mystery cult for men flourishing in the late Roman  
empire — Mith-ra-ism \mith-rā-iz-əm, -(ə)rā-\ n — Mith-ra-ist  
(mith-rā-ist) n or adj

mith-ri-date \mith-rā-dāt\ n [ML *mithridatum*, fr. LL *mithridati-  
um*, fr. L dogtooth violet (used as an antidote), fr. Gk *mithridation*,  
fr. *Mithridates*]: an antidote against poison; esp: an electuary  
held to be effective against poison



mistletoe

mith-ri-da-tism \mith-rā-dāt-iz-əm\ n [Mithridates VI 163 B.C.  
king of Pontus, fr. L *Mithridates*, fr. Gk *Mithridates*; fr. the fact that  
he reputedly produced this condition in himself]: tolerance to a  
poison acquired by taking gradually increased doses of it

mit-ti-cide \mit-ə-sīd\ n [mite] an agent used to kill mites —  
mit-ti-cid-al \mit-ə-sīd-əl\ adj

mit-i-gate \mit-ə-gāt\ vt -gat-ed; -gat-ing [ME *mitigaten*, fr. L  
*mitigatus*, pp. of *mitigare* to soften, fr. *mitis* soft + *-igare* (akin to  
L *agere* to drive); akin to OIr *mōith* soft — more at AGENT] 1

: to cause to become less harsh or hostile: MOLLIIFY <aggressive-  
ness may be mitigated or ~ channelled—Ashley Montagu> 2 a

: to make less severe or painful: ALLEVIATE b: EXTENUATE syn  
see RELIEVE ant intensify — mit-i-ga-tion \mit-ə-gā-shən\ n —  
mit-i-ga-tive \mit-ə-gat-iv\ adj — mit-i-ga-tor \-gat-ər\ n —  
mit-i-ga-to-ry \mit-i-gā-tōr-ē, -tōr-\ adj

mi-to-chon-dri-on \mit-ə-kān-dre-ən\ n, pl -dria \-dre-ə\ [NL, fr.  
Gk *mitos* thread + *chondrion*, dim. of *chondros* grain — more at  
GRIND]: any of various round or long cellular organelles that are  
found outside the nucleus, produce energy for the cell through  
cellular respiration, and are rich in fats, proteins, and enzymes —  
see CELL illustration — mi-to-chon-dri-al \-dre-əl\ adj

mi-to-gen \mit-ə-jən\ n [mitosis + *-gen*]: a substance that in-  
duces mitosis — mi-to-gen-ic \mit-ə-jen-ik\ adj — mi-to-ge-  
nic-ity \-jə-nis-ət-ē\ n

mi-to-my-cin \mit-ə-mis-n\ n [ISV *mito-* (prob. fr. NL *mitosis*)  
+ *-mycin*]: a complex of antibiotic substances which is produced  
by a Japanese streptomycetes and one form of which acts directly on  
DNA and shows promise as an anticancer agent

mi-to-sis \mi-tō-sis\ n, pl -to-ses \-sēz\ [NL, fr. Gk *mitos*  
thread] 1: a process that takes place in the nucleus of a dividing  
cell, involves typically a series of steps consisting of prophase,  
metaphase, anaphase, and telophase, and results in the formation  
of two new nuclei each having the same number of chromosomes as  
the parent nucleus — compare MEIOSIS 2: cell division in  
which mitosis occurs — mi-tot-ic \-tāt-ik\ adj — mi-tot-i-cal-ly  
\-k(ə)-lē\ adv

mi-trail-leuse \amē-trā-'yō(r)z\ n [F] 1: a breech-loading ma-  
chine gun with a number of barrels 2: MACHINE GUN

mi-tral \mi-trəl\ adj 1: resembling a mit-er 2: relating to, be-  
ing, or adjoining a mitral valve or orifice

mitral valve n: BICUSPID VALVE

mitt \mit\ n [short for *mitten*] 1 a: a woman's glove that leaves  
the fingers uncovered b: MITTEN 1 c: a baseball catcher's or  
first baseman's glove made in the style of a mitten 2 slang: HAND

mit-ten \mit-n\ n [ME *mitain*, fr. MF *mitaine*, fr. OF, fr. *mite*  
*mitten*] 1: a covering for the hand and wrist having a separate  
section for the thumb only 2: MITT la

mit-ti-mus \mit-ə-mas\ n [L, we send, fr. *mittere* to send — more  
at SMITE]: a warrant of commitment to prison

mitz-vah \mits-və\ n, pl mitz-voth \-vōt(h), -vōs\ or mitz-vahs  
[Heb *mišvāh*] 1: a commandment of the Jewish law 2: a  
meritorious or charitable act

'mix \miks\ vb [ME *mixen*, back-formation fr. *mixte* mixed, fr.  
MF, fr. L *mixtus*, pp. of *miscere* to mix; akin to Gk *mignynai* to  
mix] vi 1 a (1): to combine or blend into one mass (2) vi 1 a: to  
combine with another b: to bring into close association << busi-  
ness with pleasure> 2: to form by mixing components << a  
drink at the bar> 3: CONFUSE — often used with up <<es things  
up in his eagerness to speak out—Irving Howe> ~ vi 1 a: to  
become mixed b: to be capable of mixing 2: to enter into  
relations: ASSOCIATE 3: CROSSBREED 4: to become involved  
: PARTICIPATE <decided not to ~ in politics> — mix-able \miks-  
ə-bəl\ adj

syn MIX, MINGLE, COMMINGLE, BLEND, MERGE, COALESCE, AMALGA-  
MATE, FUSE shared meaning element: to combine or be combined  
into a more or less uniform whole

2 mix n 1: an act or process of mixing 2: a product of mixing;  
specif: a commercially prepared mixture of food ingredients <a  
cake ~> 3: MIXER 2b

mixed \miks\ adj [ME *mixte*] 1: combining characteristics of  
more than one kind; specif: combining features of two or more  
systems of government <a ~ constitution> 2: made up of or  
involving individuals or items of more than one kind: as a: made  
up of or involving persons differing in race, national origin, religion,  
or class b: made up of or involving individuals of both sexes <<  
company> 3: including or accompanied by inconsistent or in-  
compatible elements << emotions> 4: deriving from two or  
more races or breeds <a person of ~ blood>

mixed alphabet n: an alphabet (as in a cryptographic system)  
that has been rearranged or disordered systematically or randomly

mixed bag n: a miscellaneous collection: ASSORTMENT

mixed bud n: a bud that produces a branch and leaves as well as  
flowers

mixed drink n: an alcoholic beverage prepared from a recipe  
calling for two or more ingredients stirred or shaken before serving

mixed farming n: the growing of food or cash crops, feed crops,  
and livestock on the same farm

mixed grill n: meats (as lamb chop, kidney, and bacon) and vege-  
tables broiled together and served on one plate

mixed marriage n: a marriage between persons of different races  
or religions

mixed-media adj: MULTIMEDIA

mixed nerve n: a nerve containing both sensory and motor fibers

mixed number n: a number (as 5½) composed of an integer and  
a fraction

a about a kitten ar further a back ā bake ä cot, cart

au out ch chin e less ē easy g gift i trip i life

j joke ŋ sing ō flow ô flaw ōi coin th thin th this

ü loot ù foot y yet yū few yū furious zh vision